

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Andrew T. Sultenfuss et al.
Serial No.: 10/679,130
Date Filed: October 3, 2003
Group Art Unit: 2467
Confirmation No. 2208
Examiner: Berhane, Yosief H.
Title: **SYSTEM, METHOD & DEVICE FOR
TUNING A SWITCHED TRANSMISSION
LINE FOR ETHERNET LOCAL AREA
NETWORK-ON-MOTHERBOARD (LOM)**

MAIL STOP – RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

**DECLARATION OF DALE DUTY
SUBMITTED PURSUANT TO 37 C.F.R. § 1.131**

I, Dale Duty, hereby declare and state that:

1. I am a Senior Patent Paralegal at Dell Inc (“Dell”), and I am responsible for the administration of Dell’s invention disclosure program. I am knowledgeable about the system that Dell has in place for receiving invention disclosures from Dell inventors, approving an invention disclosure for the preparation of a patent application, and the assignment of an approved invention disclosure to outside counsel for the preparation of a patent application.

2. A redacted copy of a Dell invention disclosure is attached to this Declaration as Exhibit A. This invention disclosure has been titled “*System, Method & Device for Tuning a Switched Transmission Line for Ethernet Local Area Network-On-Motherboard (LOM)*” and has been assigned Dell reference number DC-05224. As indicated by the date-stamp in the lower

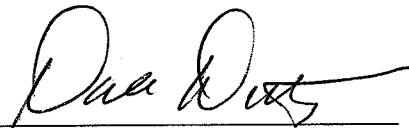
left-hand corner, this invention disclosure was received by Dell's invention disclosure system on February 28, 2003. This invention was submitted by inventors Andrew T. Sultenfuss and Jonathan Lewis.

3. On April 28, 2003, the DC-05224 invention disclosure was approved by Dell for the preparation of a patent application. On June 11, 2003, the invention disclosure was submitted by Dell to the law firm Baker Botts L.L.P. for the preparation of a patent application.

4. From the date of submission of the Disclosure, Dell legal personnel and outside counsel proceeded in accordance with Dell standard procedure to analyze the Disclosure and to prepare the above-identified patent application, which was filed on October 3, 2003.

5. I hereby declare that all statements made herein of my own knowledge are true and that all statements made herein on information and belief are believed to be true. I declare that these statements are made with the knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 10-12-10



Dale Duty

EXHIBIT A

DC-05224

Title:
IMPEDANCE MATCHING A SWITCHED TRANSMISSION LINE FOR ETHERNET LOM.

INVENTORS

Andrew T Sultenfuss (Dell)

Jonathan Lewis (Dell)

RELEVANT DATES & DISCLOSURES

Submission Date:

2/28/2003

Conception Date:

8/12/2002

Invention first described in:

Sultenfuss Eng Notebook Page 57 Volume 2, 2002
and Jon Lewis Engineering Notebook 1 Page 5

TECHNOLOGY

Product Line:

Portables

Project Code Name(s):

Bondi

Relevant Standards:

IEEE 802.3ab

WITNESSES

Witness 1:
Witness 2:

Christian Critz
Vipul Patel

THE PROBLEM

Impedance matching a switched transmission line for Ethernet LOM.

IEEE 802.3ab 40.8.3.1 specifies return loss across the frequency range of Gigabit Ethernet. Adding an analog mux to switch the Ethernet port from one physical port to another port disturbs the matched transmission line and causes return loss failures.

Current gigabit Ethernet part manufacturers do not consider matched differential impedance in their designs and ignore return loss ramifications.

Parasitic capacitance builds up and becomes a significant issue to meet IEEE while using an Eswitch device for Port control.

Enterprise notebook users rely on Docking and Non-Docking LOM applications for ease-of-use. Eliminating a dual LOM solution requires switching a single LOM device to two physically separate ports. This issue will effect Docks and Notebooks well into the future.

PRIOR SOLUTIONS/EXISTING TECHNOLOGY

10/100/1000 Ethernet switches are derivations of historical 10/100 solutions. These do not take into account the requirements for Return Loss to match the IEEE specifications.

10/100 Eswitches can and do meet the spec with tight control of board parameters and the relaxed specifications for 10/100.

Return Loss is a measure of impedance matching. Current reference designs from these manufacturers ignore return loss failures and rely on Bit Error Rate for system reliability. This violates IEEE 802.3ab and by definition makes them not compliant to IEEE.

Competitive docking solutions typically violate IEEE 802.3 in both isolation and return loss. Enterprise users expect systems to fully comply with IEEE 802.3.

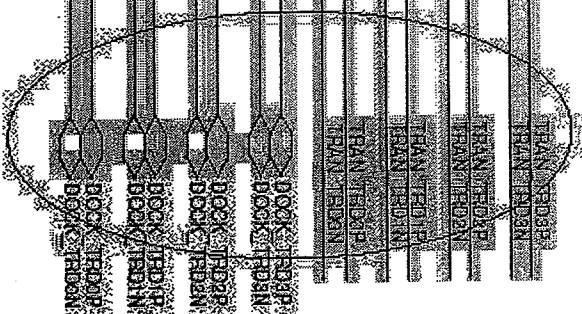
PROPOSED SOLUTIONS

By tuning the transfer function of the combined transmission line/Ethernet switch we can balance the transmission line.

With the use of series inductance, we compensate for the mismatched Ethernet switch and transmission line effects.

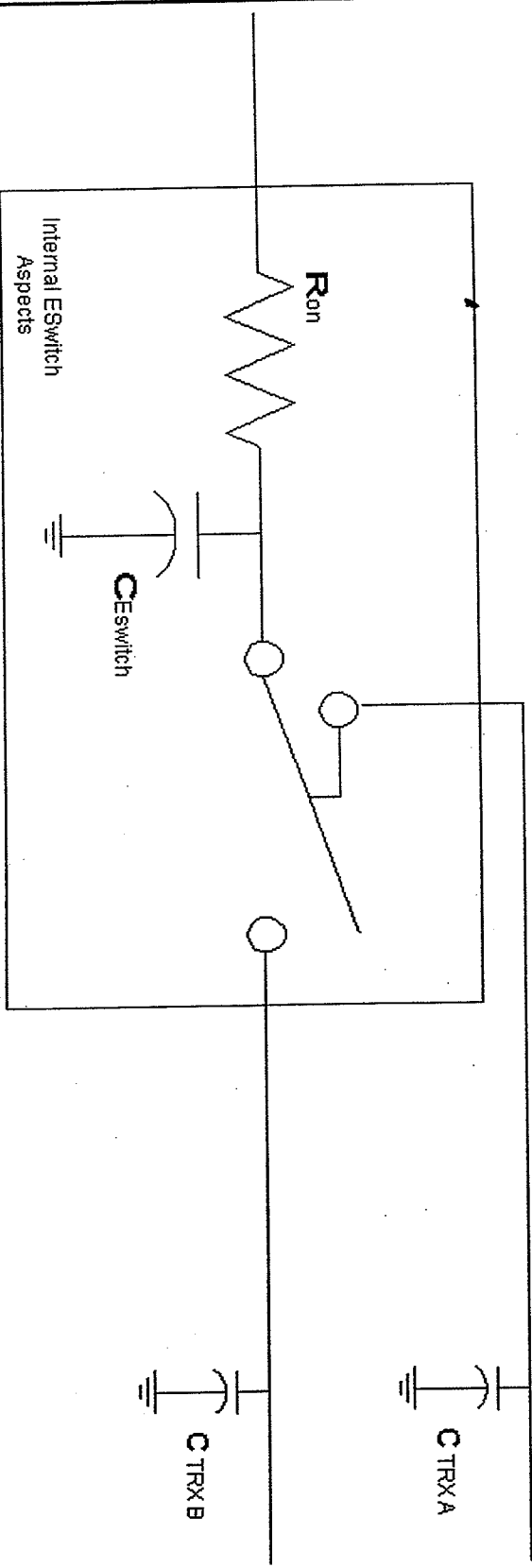
By implementing this solution we allow the system to comply with both isolation and return loss requirements as specified by IEEE 802.3.

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Basic ESwitch Transmission Line Elements

A. Sultenfuss 02/28/2003



Compensated Eswitch Transmission Line Elements

A. Sultenfuss 02/28/2003

